

Listing of the Claims:

1. (Currently amended) Analysis apparatus for analyzing skin, the apparatus comprising:
a coupling member configured to contact a region of skin;
an ultrasound probe having a probe surface, wherein the ultrasound probe is configured to receive data associated with the region of skin along an axis; and
a vibrator communicatively coupled with~~including~~ an annular piece, the annular piece defining a contact surface and a central bore, the vibrator configured to emit at least one shear wave to the region of skin via the contact surface in contact with the coupling member,
wherein the ultrasound probe is configured to detect a displacement induced in the region of skin by propagation of the shear wave, and
wherein the ultrasound probe extends through the central bore such that the probe surface contacts the coupling member and such that displacements of the vibrator are not transmitted to the ultrasound probe.
2. (Cancelled)
3. (Previously presented) Apparatus according to claim 1, wherein a thickness of the coupling member is configured to enable the focusing of ultrasound waves in a predefined region of maximum depth below a surface of the region of skin.
4. (Previously presented) Apparatus according to claim 3, wherein the depth of said predefined region is less than or equal to 4 mm.
5. (Original) Apparatus according to claim 1, wherein a focal length of the ultrasound probe lies in the range 10.4 mm to 15.6 mm.
6. (Previously presented) Apparatus according to claim 1, wherein a thickness of the coupling member lies in the range 10.6 mm to 14.4 mm.

7. (Previously presented) Apparatus according to claim 1, wherein the coupling member comprises a disk of viscoelastic material.
8. (Previously presented) Apparatus according to claim 7, wherein the coupling member is configured to be held against a surface of the skin by a holding ring provided with an inwardly-directed rim against which a face of the coupling member remote from the skin can bear.
9. (Previously presented) Apparatus according to claim 8, including a frame to which the vibrator and the ultrasound probe are secured, wherein the frame enables the apparatus to be positioned so that the axis is substantially perpendicular to a surface of the region of skin.
10. (Cancelled)
11. (Previously presented) Apparatus according to claim 1, wherein the contact surface presents symmetry about the axis.
12. (Previously presented) Apparatus according to claim 1, wherein the contact surface presents circular symmetry about the axis.
13. (Previously presented) Apparatus according to claim 1, wherein the ultrasound probe is arranged to emit and receive ultrasound waves at a frequency lying in the range of 1 MHz to 300 MHz.
14. (Previously presented) Apparatus according to claim 1, wherein the ultrasound probe is arranged to emit and receive ultrasound waves at a frequency lying in the range of 30 MHz to 70 MHz.
15. (Previously presented) Apparatus according to claim 1, wherein the ultrasound probe is arranged to emit and receive ultrasound waves at a frequency of 50 MHz.

16. (Previously presented) Apparatus according to claim 1, including a generator arranged to deliver a low-frequency signal to the vibrator during an analysis period, the signal having a frequency lying in the range of 100 Hz to 500 Hz.
17. (Previously presented) Apparatus according to claim 1, including a generator arranged to deliver a low-frequency signal to the vibrator during an analysis period, the signal having a frequency of about 300 Hz.
18. (Previously presented) Apparatus according to claim 1, including a processor device configured to receive information from the ultrasound probe, wherein the information represents a mechanical property and/or a thickness of at least one layer of the skin.
19. (Previously presented) Apparatus according to claim 18, wherein the processor device is configured to deliver state information relating to a state of the skin, by comparing a measured value with a reference value.
20. (Previously presented) Apparatus according to claim 19, wherein the state information is indicative of an age associated with the skin.
21. (Previously presented) Apparatus according to claim 18, wherein the processor device is configured to store the information received from the ultrasound probe at various successive time points.
22. (Previously presented) Apparatus according to claim 18, wherein the processor device is configured to store the information received from the ultrasound probe-for each sample during a predefined time interval, the number of samples lying in the range of 50 to 500.
23. (Previously presented) Apparatus according to claim 22, wherein the predefined time interval lies in the range of 2.2 ms to 0.8 ms.

24. (Canceled)

25. (Currently amended) A skin analysis method, comprising:

applying an apparatus to a region of skin associated with a patient, the apparatus comprising:

a coupling member configured to contact a region of skin;

an ultrasound probe having a probe surface, wherein the ultrasound probe is configured to receive data associated with the region of skin along an axis; and

a vibrator including an annular piece defining a contact surface and a central bore, the vibrator configured to emit at least one shear wave to the region of skin via the contact surface in contact with the coupling member

wherein the ultrasound probe is configured to detect a displacement induced in the region of skin by propagation of the shear wave, and

wherein the ultrasound probe extends through the central bore such that the probe surface contacts the coupling member and such that displacements of the vibrator are not transmitted to the ultrasound probe;

receiving data associated with the region of skin; and
storing the data.

26. (Previously presented) A method according to claim 25, further comprising processing the data coming from the ultrasound probe so as to determine at least one value relating to a mechanical property of the region of skin.

27. (Original) A method according to claim 26, wherein said mechanical property is selected from the group consisting of its Young's modulus, its shear modulus, and the propagation speed of the shear wave.

28. (Original) A method according to claim 26, wherein the phase lag of the shear wave is calculated as a function of the depth.

29. (Previously presented) A method according to claim 26, wherein a state of the region of skin is determined by comparing a value for Young's modulus resulting from analyzing the region of skin with reference values.

30. (Previously presented) A method according to claim 29, wherein the determined state of the region of skin is indicative of a degree of aging of the skin.

31. (Original) A method of evaluating a mechanical property of a region of the skin, the method comprising:

analyzing said region with the apparatus according to claim 1; and

delivering, from the results of the analysis, information relating to said mechanical property.

32. (Currently amended) A method of determining an effectiveness of treatment that affects a mechanical property of skin, the method comprising:

performing a first evaluation of said mechanical property;

performing the treatment on the skin; and

after the treatment, performing a second evaluation of said mechanical property, at least one of the first and second evaluations including the steps of

analyzing the skin ~~using by means of~~ the apparatus according to claim 1, and

processing signals coming from the ultrasound probe so as to determine at least one value relating to the mechanical property of the skin.

33. (Currently amended) A method of treating a region of a human body, the method comprising:

analyzing skin ~~using by means of~~ the apparatus according to claim 1;

processing signals coming from the ultrasound probe so as to determine at least one value relating to a mechanical property of the skin; and

performing treatment that affects said property based on an evaluation of the at least one value.

34. (Previously presented) The method of claim 32, further including demonstrating activity or effectiveness of a product based on the second evaluation.

35. (Currently amended) Analysis apparatus for analyzing skin, the apparatus comprising:
a coupling member configured to contact a region of skin;
an ultrasound probe having a probe surface in contact with the coupling member, wherein the ultrasound probe is configured to receive data associated with the region of skin along an axis; and

a vibrator configured to emit at least one shear wave to the region of skin via a contact surface of the analysis apparatus, the contact surface being distinct from the probe surface, and in contact with the coupling member,

wherein the ultrasound probe is configured to detect a displacement induced in the region of skin by propagation of the shear wave,

wherein the contact surface and the probe surface are substantially co-planar, and wherein displacements of the vibrator are not transmitted to the ultrasound probe.